UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

14 April 2005

**VIA ELECTRONIC - MAIL**

Pat Brooks
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**RE: US Environmental Protection Agency Review (EPA) Comments - Draft Removal Action Design and Implementation Work Plan Metal Debris Reef and Metal Slag Areas Parcels E and E-2, Revision O, Hunters Point Shipyard, San Francisco, CA, February 2005**

Dear Pat:

This letter will officially replace the EPA preliminary technical review comments on the subject draft removal design and implementation work that were transmitted on 4 April 2005 via electronic mail. Please note that the review comments discussed under number 1 "*Summary of Significant Issues Not Addressed in the Draft Removal Design and Implementation Work Plan,*" and under Specific Comment number 3 "*Section 4.1.2, Marine Geophysical Survey, Page 4-4*" have been revised based upon a review and subsequent teleconference with the Department of the Navy (DON) regarding the Marine Geophysics data sent to EPA. These revisions reflect recent information provided by the Navy that was not included in the Draft Work Plan. These issues notwithstanding, EPA commends the Navy for the comprehensive planning to clean up radiological contamination at the metal slag area (MSA) and the metal debris reef (MDR) and planning ecological enhancements as part of the removal action.

As a result of the technical review, EPA has identified several significant issues that are not addressed in this Work Plan. While cognizant of the fact that the proposed activities for the Metal Debrief Reef and Metal Slag Areas constitute a time-critical removal action (TCRA), the Agency believes that these salient issues will need to be addressed and incorporated into the subject work plan prior to commencing with fieldwork. The most salient of these will be briefly discussed below. EPA's general and more detail review comments are discussed in the attachment.

***Summary of Significant Issues Not Addressed in the Draft Removal Design and***

*Implementation Work Plan*

1. The basis for the proposed horizontal and vertical extent of excavation is not clear. Given that the cross-sections do not match the core logs, it is unclear how the extent of metal slag was determined. The results of the marine geophysical survey were not included in the Work Plan and the proposed extent of excavation is very near the 0.0 mean lower low water (MLLW) line. This would seem to imply that there is no debris offshore. Moreover, there is known radiological contamination beyond the proposed excavation boundaries. However, during the review period, the Navy provided separate figures with the results of the marine geophysical survey and agreed during a conference call to do some exploratory excavating to investigate the potential that metal extends beyond the proposed boundary in areas where the on-shore geophysical survey indicated high electromagnetic signatures at the boundary. The marine geophysical data and agreement should be reflected in the Final Work Plan.

2. The proposed action does not include sufficient construction and post-construction monitoring. This is a radiological removal action, but the Dredging Elutriate Test (DRET) results indicate that metals, specifically copper, nickel, and zinc will be released at concentrations that exceed surface water quality criteria. Monitoring for metals is not proposed and a silt curtain will not stop transport of dissolved metals. Accordingly, EPA recommends that Baseline sampling should be conducted. In addition, surface water sampling for metals should be performed during all excavation, dredging, and construction activities. EPA also notes that confirmation soil sampling of the excavation for CERCLA contaminants is not proposed. However, given that conditions will be changed, it is important that sampling be conducted so that the risk associated with the materials left in place can be ascertained. Finally, post-restoration monitoring for wetland function and long-term effectiveness has not been proposed and is needed.

3. Additionally, EPA is concerned that the subject document does not include within its scope any planning nor provision for the wetlands mitigation that will occur after the metal debris, metal slag, and contaminated soil and sediment are removed. Among the issues of concern are:: a) sufficient details for this restoration are not included in the Work Plan; b) clarification as to whether sand that will be used as backfill will provide a suitable substrate for wetlands

restoration; and c) including a biologist or wetlands scientist as part of the project team relative to making decisions during excavation and backfilling. EPA believes that addressing and including these issues regarding wetland migration in the scope of the work plan will significantly enhance the attainment of the goal of wetlands restoration.

Finally, the data collected in 2004 to support the Time-Critical Removal Action (TCRA) does not appear to have been incorporated in the *Technical Memorandum Parcel F Feasibility Study Data Gaps Investigation.* EPA believes that the data is relevant to the Parcel F Feasibility Study and should be incorporated into both documents.

EPA reaffirms its commitment to working in partnership with the DON to expeditiously facilitate the cleanup and transfer of property at the Hunters Point Shipyard in a manner that is protective of human health and the environment. Should you have any questions regarding the review comments or require additional information, please contact me at (415) 972-3023.

Sincerely,

/s/

James A. Ricks, Jr.
Project Manager
Superfund Division (SFD-8-3)

Attachment

cc: (see Distribution List)

**Distribution List HPS**

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**U.S. Environmental Protection Agency**
**Review Comments**
**Review of the Draft Removal Action Design and Implementation Work Plan**
**Metal Debris Reef and Metal Slag Areas Parcels E and E-2, Revision 0, Hunters Point Shipyard, San Francisco, California, February 2005**

## GENERAL COMMENTS

**1.** EPA commends the Navy for its comprehensive approach and planning to clean up the radiological contamination at the metal slag area (MSA) and the metal debris reef (MDR) and planning ecological enhancements as part of the removal action.

**2.** Because the Navy is conducting post-removal habitat restoration at the MSA and MDR, the time critical removal action (TCRA) may be the final remedy for these portions of Parcel E. Additional information is needed to ensure the long-term effectiveness of the removal action and to evaluate the success of the restoration. Please expand the work plan to discuss the following issues: (1) coordination between the TCRA and Parcels E and E-2 Feasibility Studies, (2) the potential for re-contamination of the TCRA areas from contaminants in Parcel F sediments, and (3) post-removal action monitoring for wetland function and long-term effectiveness of the remedy.

**3.** The Navy plans to conduct pre-construction biological monitoring and habitat surveying and post-construction restoration, but apparently does not plan to include habitat conservation or restoration criteria in decisions made during removal or backfilling (e.g., stockpile locations, fill grain size, final grading, etc.). For example, the project team

shown in Appendix A Figure 8-2 does not include a wetland scientist or biologist. Further, the Navy plans to design the wetlands after the final grading is complete based on the post-removal conditions (Section 7.16, page 7-12). An experienced wetland scientist could improve field decisions made during the removal action to enhance the restoration and facilitate coordination with natural resource trustees. An experienced biologist or wetland scientist would also bring expertise to the interpretation of surface water quality monitoring data collected during the removal action (see Section 7.12). Please expand the project team to include an experienced wetland scientist reporting to the metal reef/slag project manager.

4. Chapter 5 Radiological Controls indicates that a Radiation Work Permit (RWP) shall be prepared to "specify the radiological safety requirements for activities performed under this Work Plan." It is assumed that the contents of this RWP will be available for review at a future date. Therefore, the adequacy of the RWP [except for the intended contents as presented in this Draft Removal Action Design and Implementation Work Plan Metal Debris Reef and Metal Slag Areas Parcels E and E-2 (the Work Plan)] cannot yet be assessed and may be evaluated under a separate venue in the future.

## SPECIFIC COMMENTS

1. **Section 4.1.1.1, Topographic Survey, Page 4-1:** The text states that the topographic survey data is shown on Figures 4-1 and 4-2. However, these figures depict the geophysical data. It does not appear that there are any figures that exclusively depict topography. Please revise the text to cite the correct figures and/or, if necessary, provide any missing figures.

2. **Section 4.1.1.1, Topographic Survey, Page 4-2 and Section 4.1.3, Landside Geophysical Survey, Page 4-5:** The survey boundaries cited in the text do not match the figures. According to the text, the topographic survey extended 200 feet landward of the 0.0 mean lower low water (MLLW) and the landside geophysical survey extended 300 feet landward of 0.0 MLLW. The text on page 4-5 also indicates that the geophysical survey was expanded laterally when preliminary measurements or visual observation indicated the presence of slag or metallic debris. Figures in the metal slag area include about 120 feet of topography inland from 0.0 MLLW; the geophysical survey (Figure 4-2) extended 180 to 280 feet inland from 0.0 MLLW. In the Metal Debris Reef Area, 150 feet of topography and 85 to 165 feet of geophysical survey results are shown inland from 0.0 MLLW. It appears that the geophysical survey at the Metal Debris Reef did not extend even 200 feet inland from 0.0 MLLW. Please revise the text to accurately describe the areal extent of the surveys; if the topographic survey extended further, but the scale of the maps does not allow all of the topographic data to be show, please state this.

3. **Section 4.1.2, Marine Geophysical Survey, Page 4-4:** The results of the marine geophysical survey are not included in this document and it is unclear if the extent of the metal slag and metal debris reef (e.g., the heavy dashed lines on Figures 2-3 and 2-4) incorporate the results of this survey. The Base Realignment and Closure (BRAC) Cleanup Team (BCT) was told at several meetings that most of the metal debris reef is submerged, but the outlined area on Figure 2-3 does not indicate that to be the case. Please provide the results of the marine geophysical survey and discuss whether these results were used to determine the extent of the metal slag and metal debris reef.

4. **Section 4.1.4, Environmental Resources Survey, Page 4-6:** The discussion of activities resulting in the disturbance of sensitive vegetation during the 2004 site characterization is incomplete. Field personnel flagged sensitive vegetation prior to drilling activities; however, access limitations to some sampling locations resulted in the disturbance caused by drill rig mounted trucks, a 5,400 square foot (sq ft) area of the MDR and a 10,000 sq ft area of the MSA. Specific factors leading to this disturbance should be included in the site characterization discussion, along with the mitigative measures considered and natural resource trustee consultation conducted. This is particularly important because precautions (i.e., flagging) did not prevent field activities from impacting sensitive habitat. Details regarding the access issues leading to the disturbance of sensitive vegetation should be evaluated and procedures ensuring that this situation will be avoided in the future should be incorporated into the Work Plan. In addition, measures proposed to mitigate for this loss of habitat should be discussed.

5. **Section 4.1.6, Downhole Geophysics, Page 4-10:** The results of the downhole geophysical survey are not provided. Some core logs include notes about EM signatures, but this information is not consistently provided and it is not clear if this information is from the frequency-domain electromagnetic induction (FDEMI) or from the Fisher Pulse 8 metal detector. Please provide all geophysical data so that the Regulatory Agencies can verify the extent of debris. Also, please clarify whether the notes on the core logs are

from the FDEMI survey or from the metal detector.

6. **Section 4.1.9, Radiological Sample Analysis, Page 4-11:** The Work Plan indicates that samples were also analyzed for both isotopic plutonium and uranium, which are also alpha emitters. However, results of this analysis are not presented in the text of the Work Plan or in the associated tables. Please address these isotopes and related analytical results.

7. **Section 4.2.2 Radiological Results, Page 4-13:** The Work Plan references Tables 4-2 and 4-3 for radiological information pertaining to the MDR (Metal Debris Reef) and MSA (Metal Slag Area), and states that at the MDR, "one sample had elevated radioactivity for $^{137}$Cs. At the MSA, three samples had elevated radioactivity for $^{137}$ Cs". Examination of Tables 4-2 and 4-3 show that Samples MS-03, MS-05 and MS-14 also exhibited net activities in excess of the cesium 137 ($^{137}$ Cs) derived concentration guideline level (DCGL) of 1.3 E-01. Also, sample MR-03 in the MDR area exhibited a net activity for radium in excess of the soil DCGL of 2 x E-00. The uncertainty associated with each of these measurements is higher than the net activity and may explain the reasons why the Work Plan authors chose not to list these values as exceedences. However, additional explanation within the text of the Work Plan is warranted. Please revise the Work Plan to explain why the additional samples exhibiting net activities greater than the DCGL are not cited as having elevated radioactivity.

8. **Section 4.2.2, Radiological Results, Page 4-13:** The radiological results (Figures 2-3 and 2-4) suggest that either the extent of radiological contamination is not defined by the location of metal slag or metal debris, or the extent of metal slag and metal debris is greater than what is shown on the figures. The extent of metal slag/debris used to define the removal footprint has implications for whether radiological contamination will be fully remediated. Please revise the Work Plan to discuss the apparent conflict between the radiological results and the extent of metal slag at MSA and metal debris at MDR and explain why the proposed excavation footprints do not include all areas of radiological contamination greater than radiological remedial objectives (RROs).

9. **Figures 2-3 and 2-4:** Both figures 2-3 and 2-4 include historic and current (i.e. June through September, 2004) characterization activities. Explanation for information presented in these figures is presented in Section 2.6 of the Work Plan. However, both figures identify data obtained as part of the 2004 characterization activities as "pre-characterization" without explanation. Please revise the Work Plan to correct the terminology used, or to explain the selected usage.

10. **Section 4.2.5, Contaminant Mobility Results, Page 4-14:** The results in Tables 4-9 indicate that dissolved metals concentrations may exceed surface water quality criteria at the point of excavation but the only control measure is a silt curtain. A silt curtain would not be expected to control dissolved metals contamination. Please revise the text to

resolve this inconsistency.

11. **Section 5.7, Investigation Levels, Page 5-4:** The Work Plan indicates that investigation levels will "normally" be established at the reference area mean plus 3 standard deviations ($\sigma$) for gamma surveys and alpha/beta scans. If this reference level was established and approved as part of the Base-wide Plan, please reference this plan within the Work Plan. Alternatively, if the investigation levels are unique to this Work Plan, please provide additional justification for the selection of $3\sigma$. Also specify what would constitute an abnormal situation where this $3\sigma$ value would not be used.

12. **Section 5.8, Radiation Detection Instrumentation, Page 5-4:** Table 5-2 presents the instrumentation that may be used for radiological surveys at this site. The instrument listing agrees with suggested instrumentation in Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), Appendix H. However, the language of Section 5.8 implies that other instrumentation could be used. Please provide the circumstances under which the instrumentation in Table 5-2 would not be used.

13. **Section 5.8.1, Calibration, Page 5-5:** The Work Plan states that portable survey equipment calibration will be completed on an annual frequency; MARSSIM suggests that calibration should be performed, at a minimum, annually. However, MARSSIM also provides guidance as to when more frequent calibration might be required. Please revise the Work Plan to indicate the conditions under which a more frequent calibration check might be required.

14. **Section 5.9.6, MDC for Gamma Scans for Surface Areas (2-inch by 2-inch NaI Probe), Page 5-12:** The Work Plan indicates that the number of background counts in a scan interval time is 5,884 cpm/60 seconds per minute. Moreover, 5the work plan indicates that this value was taken from a non-impacted area in Parcel E. However, it is not clear whether other non-impacted area values are available and whether the other values would be more relevant or appropriate. Please provide additional information to justify the selection of this value for use. Additionally, several input parameters for both Microshield™ and equation 7-11 are presented in the Work Plan. The origin of these values must be referenced. Or alternatively, if this was an example presented to clarify the use of the MARSSIM based equations, then this must be clearly stated.

15. **Section 5.10, Laboratory Analysis, Pages 5-15 to 5-16:** Section 5.10 presents on-site laboratory equipment, but does not indicate the number or location of swipe samples that will be analyzed by the onsite lab, nor whether additional media will be analyzed. Please revise the Work Plan to address, in this section, the specific nature (media) and number of samples to be analyzed by on-site laboratory equipment, as this is required to understand whether the proposed instrumentation is correct for the media to be analyzed.

16. **Section 5.11, Survey Implementation, Pages 5-16 to 5-18:** The Work Plan provides the

types of surveys to be performed, but it is difficult to get a clear understanding of the specific types of scans/static surveys that may or may not be conducted based on specific media associated with the MDR and MSA areas. While the Sampling and Analysis Plan does provide additional detail about the Sampling Strategy (Section 4), additional information is warranted to fully understand how the specified measurement techniques (i.e. static techniques) will be used as part of the sampling strategy (see Comment 11, below). Please revise this section to provide a general discussion or table that presents the anticipated survey types for each area (recognizing that the MDR will obviously be scanned above ground by lifts). Also please indicate within the table the anticipated sample/measurement numbers that might be collected. Alternatively, please reference specific sections in Appendix E that address these elements.

17. **Section 5.11.1 Reference (Background) Areas, Page 5-16:** The Work Plan states that a designated background area will be established, but the criteria for determining the background location were not included. It would appear that the background area can be selected prior to implementation of the Work Plan, so it is unclear why more detail regarding the media type, specific sample location, sample number, etc. have not been specifically addressed. Please revise the Work Plan to include this information, or to specify why more detail cannot be provided at this time.

18. **Section 6.1, Design Basis Shoreline Protection, Page 6-2:** The text states that the MSA is protected from aggressive wave environments by shallow sloping beach and the adjacent land mass, but the Technical Memorandum Parcel F Feasibility Study Data Gaps Investigation (FSDG memo) states that waves are likely to be the dominant sediment resuspension mechanism. In light of the information provided in the FSDG memo, it is unclear that sand alone is required to protect this portion of the shoreline. Please revise the text to resolve this apparent discrepancy between the data collected in the investigation of Parcel F and the design basis for the Parcel E MSA removal action.

19. **Section 6.1, Design Basis Shoreline Protection, Page 6-2:** It is unclear that sand used as backfill will provide the correct soil texture for the planned wetland restoration. Please expand the Section 6.0 to include the design basis for wetland restoration.

20. **Section 7.3, Environmental Resources Survey, Page 7-2:** This section lacks a detailed discussion of Environmental Resource Survey (ERS) activities, methods, and procedures. Survey methods determining the probability of special-status species residing within project limits should be clearly identified. Survey descriptions should explain details such as location, size, and basis for survey area; data to be collected , survey instruments, and guidelines for data interpretation or data quality objectives. Please expand the Work Plan to include details of the ERS. This comment also applies to the Section 4.1.4 discussion of the 2004 ERS conducted during site characterization activities; at a minimum the discussion should explain survey methods to the requested level of detail and provide the name of the wildlife biologist performing the environmental surveys confirming no residence of special-status species.

21. **Section 7.9, Mobilization, Page 7-6**: Work Plan excavation activities may impact environmental resources (e.g., approximately 54,000 sq ft of the MDR and 41,000 sq ft of the MSA will be disturbed during excavation activities, according to Appendix A, Section 4.1) even though pre-mobilization activities include another ERS. Although impacts from the proposed excavation activities are anticipated to be discountable, short-term, and fully mitigated, the fact that environmental resources were disturbed during characterization indicates that additional details are needed in the Work Plan to ensure that unnecessary destruction does not occur. Please incorporate a detailed discussion of preliminary excavation activities ensuring minimal destruction of sensitive habitats and mitigative measures proposed for impacts that do occur.

22. **Section 7.12, Water Monitoring (Non-Radiological), Page 7-9:** The planned water monitoring does not include baseline levels of total or dissolved metals. Dissolved metals should be monitored prior to and during excavation to evaluate the effectiveness of surface water quality protection measures. Please revise the Work Plan to include baseline metals monitoring, as well as metals monitoring during construction.

23. **Section 7.14, Post-Excavation Sampling, Page 7-10:** The planned sampling and analyses do not include analyses for chemical contamination. As discussed in Section 4.2.3, both areas are impacted by chemical as well as radiological contamination. The objective of the removal action is to remove radiological contamination, but the action will result in reduction of the mass of chemical contamination. Since the final conditions will be changed, it is important to understand the extent of contamination left in place in order to evaluate the remaining risk. Please expand the text to include post-excavation sampling and analysis for chemical contaminants or explain how and when this data will be collected.

24. **Section 7.16, Site Restoration, Page 7-11:** The information necessary to confirm that a permanent net loss of wetlands, one of the constructed wetland design objectives, will not occur is not provided in the Work Plan or the accompanying appendices. For example, the constructed wetlands will encompass approximately 1.5 acres; however, no estimation of the amount of wetlands potentially impacted by the removal action is provided. This type of information should be provided on a figure for each site (MDR and MSA) within the Work Plan. Preferably, the information would be presented on a three figure overlay showing stages of the removal action and encompass the excavation area, a 300 foot buffer around each site, and the areas adjacent to the excavation footprint. The first figure should present baseline habitat types (e.g., mud flats, debris, vegetation, vegetation and debris, etc.) and conditions while noting sensitive habitat within the excavation area, the buffer, and the adjacent areas. The second figure should show the location of construction facilities (e.g., dewatering / screening pad, staging areas, stockpiles, etc.). The third figure should present the location, size, and approximate design of reconstructed wetlands and other restored habitats. Using the same scale to create figures

with this information will clarify issues such as whether construction facilities are within sensitive habitats. Please provide these figures in the revised document.

25. **Appendix A, Section 3.0, Environmental Regulatory Requirements, Page A.3-1:** Summaries pertaining to Regulatory Agency review requirements included in the environmental protection plan (EPP) is not sufficient. It is not possible to determine if the substantive requirements will be met because of the lack of detail provided by references to agency permitting requirements, conditions, and provisions. Please confirm the integration of agency-directed required actions and removal action design / Work Plan implementation activities by referencing the Work Plan component that coordinates with each regulatory review requirement.

26. **Appendix A, Section 3.0, Environmental Regulatory Requirements, Page A.3-1:** Regulatory requirements regarding surface water quality, including criteria and/or parameters potentially impacted by excavation activities, are not discussed in this section. The Dredge Material Management Office includes various San Francisco Bay organizations that focus on developing a comprehensive approach to dredged material management issues; however, no information is provided regarding surface water monitoring requirements during dredging activities; specifically for issues related to contaminant fluxing (i.e., metals) from sediments into the water column. Please revise this section to include regulatory requirements for surface water quality and surface water monitoring requirements.

27. **Appendix A, Section 3.1.5, Endangered Species Act, Page A.3-4:** The EPP does not summarize the relevant portions of the 2004 Biological Assessment to support the finding that project impacts on special-status species will be discountable, short-term, and fully mitigated. Further, the EPP does not describe the specific elements of the Work Plan and the specific supplemental guidance documents that are required to prevent the project from adversely affecting special status species. The Work Plan does not describe the location of potential habitat for special-status species relative to the areas that will be affected by the removal action, stockpiling, and equipment staging. Please revise the text to provide additional assurances that the project impacts on special-status species will be discountable, short-term, and fully mitigated.

28. **Appendix A, Section 3.2, Executive Orders, Page A.3-5:** Sufficient evidence has not been provided to substantiate the determination that no permanent net loss of jurisdictional wetlands or sensitive flood plains will result from proposed project activities. The conclusion does not appear to be validated by quantitative evidence (e.g. the extent of impacts on wetland topography, drainage, vegetation, and wildlife). Please provide specific information concerning the amount of lost wetlands or flood plains for comparison with site restoration activities in order to support the conclusion that no net loss will occur.

29. **Appendix A, Section 4.0, Environmental Resource Protection and Mitigation, Page A.4-1**: The protective and mitigative measures discussed in this section do not address the complete list of resources presented in Section 1.0. For example, the text in Section 1.0 indicates that physical features disposed along the shoreline at Parcels E and E-2, including rip-rap and docks, provide artificial habitats for estuarine species; however, the text in Section 4.0 discusses neither protective nor mitigative measures for this potentially lost habitat. Impacts to estuarine habitat provided by these physical features should be assessed and reported in the appropriate Work Plan section. The decision to protect or mitigate for the potential affects on estuarine habitat should be presented in this section accompanied by a discussion of the selected measures to be taken regarding environmental resources.

30. **Appendix A, Section 4.1, Land Resources and Vegetation, Page A.4-1:** The estimate of the areas that will be disturbed is approximately 2 acres (95,000 sq ft) but the wetland restoration is anticipated to encompass 1.5 acres. Please provide an estimate of upland and wetland areas that will be disturbed, explain how the 1.5 acre restoration area was established, and discuss whether there will be a net loss of wetlands.

31. **Appendix A, Section 4.2, Fish and Wildlife / Threatened, Endangered, and Sensitive Species, Page A.4-1:** Specific examples of methods leading to the assumption that impacts from proposed project activities are consistent with those evaluated in the 2004 Biological Assessment (the 2004 Report) and site-specific resource surveys are not provided. The paragraph following the presentation of this assumption predicts that the impacts from proposed activities will be discountable, short-term, and fully mitigated. Presumably these were the characteristics of impacts evaluated in the 2004 Report; however, this information is not provided in the Work Plan. Additional information regarding inputs, evaluation methods, comparability of proposed and 2004 impact assessments, and a complete discussion of conclusions leading to the prediction mentioned above is necessary to determine the validity of the assumption in question. Please provide this information by 1) summarizing the 2004 Biological Assessment inputs and data collection, evaluation methods, and conclusions; 2) discussing the comparability of proposed and 2004 impact assessments; and 3) providing examples of impacts assessed in the 2004 Report. Also, please briefly summarize within the text of Section 4.2 the compliance terms and conditions outlined in the 2004 Report that will be implemented during this phase of work.

32. **Appendix A, Section 4.3.1, Sensitive Area Delineation, Page A.4-2:** The activities proposed to delineate sensitive habitats may be inadequate. The proposed activities, which include installing barricades and flagging with caution tape, are intended to restrict unwarranted entry and disturbance in areas with sensitive habitats. Assurance that these methods will effectively prevent destruction of sensitive habitat is needed due to the previous destruction of wetlands vegetation that was delineated by flags (see earlier comment on Section 4.1.4 that discusses destruction of more than 15,000 sq ft of wetland

vegetation). Information regarding equipment size, durability, installation procedures and estimated effectiveness should be included in this section. Field workers should be trained, preferably by a wetlands scientist in this case, to effectively protect sensitive habitats (as discussed in Sections 3.1.5 and 4.2) and this appendix should include this provision in Section 7.0. Further, a wetlands scientist should be involved throughout the duration of this project, ensuring that the protection of sensitive habitats is a priority regardless of unexpected issues such as limited access to sampling locations.

33. **Appendix A, Section 4.3.3, Stormwater, Sediment, and Erosion Control, Page A.4-2:** The mitigative measures listed in this section are not complete. Please include performing removal action activities during the dry season to minimize erosion and surface water quality impacts to this list. Also, please discuss whether timing removal action activities to avoid disturbing species during reproductive seasons is necessary in Section 4.2.

34. **Appendix C, General Comment:** The construction specifications discuss the procedures for placing armor rock, filter rock, geotextile fabric, rat rock and sand. However, except for sand, armor rock and geotextile fabric, the construction drawings do not indicate where the other shoreline protection materials will be used. For example, it is stated that the void spaces within the large armor rock and the top of the bank are to be filled with rat rock to within 6 inches of the face of the armor rock. However, this feature is not apparent in any of the construction drawings. Please revise the construction drawings to either show areas where use of these different materials are expected or provide the instructions on the drawings for the procedures to be followed if the need for these materials is field determined.

35. **Appendix C, Figure C-4, Extent of Metal Debris Reef and Figure C-7, Extent of Metal Slag Area:** The views indicated for cross-sections B, C, D, E, and F do not match the cross-section views presented on Figures C-5 and C-6. The views presented in these figures show the opposite of the views implied on Figure C-4. Similarly, the views indicated for cross-sections H, I, J, K and L do not match the cross-section views presented on Figures C-8 and C-9. Please revise these figures to resolve these discrepancies.

36. **Appendix C, Figures C-5 and C-6, Extent of Metal Debris Reef Area Cross-Sections and Figures C-8 and C-9, Extent of Metal Slag :** It is unclear why the cross-sections do not consistently indicate the length of the borings. It appears that the length of the borings is included on Sections A and B on Figure C-5, but a standard symbol (9-10 ft long at the scale of the cross-sections) was used to designate all borings on each of the other cross-sections, regardless of the actual lengths of the boring (borings apparently varied from about 4.6 feet to 20 feet in length). Please depict the actual length of each boring on the cross-sections.

37. **Appendix C, Figures C-5 and C-6, Extent of Metal Debris Reef Area Cross-Sections and Figures C-8 and C-9, Extent of Metal Slag :** It is unclear why the information in the boring logs does not match the depictions of the extent of the metal slag layer and the trace metal slag layer on the cross-sections. In addition, in some cases, the logs indicate the presence of large metal objects but the metal slag layer is depicted as ending at a shallower depth. It appears that neither the electromagnetic (EM) signatures nor the boring logs were used to determine the vertical extent of slag and trace metal slag. These issues are critical because it appears that the excavations will be based on the information shown on the cross-sections, which are inconsistent with the logs. These discrepancies may result in insufficient excavation. Some examples of discrepancies between the logs and the cross-sections:

- **Figure C-5, Section A:** The thickness of the metal slag in the vicinity of MR08 is shown as 5 feet on figure C-5, but the log indicates that metal slag was present from 0 to 7.5 feet below ground surface (ft bgs) and that other metal objects were present between 10 and 15 ft bgs. It is unclear why the thickness was not shown as 7.5 feet, with a additional 5 foot thick layer of trace metal.
- **Figure C-5, Section A:** Slag is depicted between 0 and about 3 feet in MR-09, but the log indicates slag between 0 and 10 ft bgs. It appears that MR-09 was projected onto the line of section since the boring begins below the surface, as shown on this section, but since there is no boring at this location on the section, it is unclear how the depth of slag was determined.
- **Figure C-5, Section A:** Trace metal slag is not shown at the location of MR-12, but the log indicates that it was present between 7.5 and 10 ft bgs. There is a similar problem on the section in the vicinity of MR-15; the log indicates trace metal slag between 10 and 15 ft bgs, but there is no trace metal slag layer in this vicinity.
- **Figure C-5, Section B:** The lack of borings along most of this section makes it appear that the depiction of slag thickness was arbitrary. Some additional problems include the fact that the log for MR-08B only indicates slag from 0-2.5 ft bgs, but the section shows 7 or 8 feet of slag. Where there are two borings with conflicting information, only the closer boring should be used to create the section. Also, the log for MR09 indicates slag between 0 and 5 ft bgs, but the section does not show any slag in this location.
- **Figure C-5, Section C:** The MR-10 log includes metal between 7.5 and 10 ft bgs, but the section does not show this. It is unclear how it can be determined that the metal is not slag and that it does not contain radioactive materials. There is a discrepancy between the log for MR08A (metal at 0-2.5 ft bgs and slag between 5 and 7.5 ft bgs, no trace slag layer) and the depiction on the section. Similarly, the log for MR06 has trace slag between 2.5 and 5 ft, but the section shows this trace slag layer between 12 and 16 ft bgs.
- **Figure C-6, Section E:** The MR-11 log does not have slag between 0 and 5 ft bgs, but the section indicates slag in this interval. Further, the log only indicates

slag between 5 and 10 ft bgs, but the section shows slag between 0 and 20 ft bgs. The trace slag layer in MR-15 between 10 and 15 ft bgs and in MR-12 between 7.5 and 10 ft is not shown on the section.

- **Figure C-6, Section F:** The log of MR-14 shows trace slag between 5 and 12.5 ft bgs that is not shown on this section.
- **Figure C-8, Section G:** The log for MS-06D shows trace slag between 7.5 and 10 ft bgs that is not shown on the section. The log for MS-02 does not indicate any slag, but slag is shown on the section. The full length of MS-08 is not shown on the section. According to the log, there is no slag in MS-07A between 5 and 7.5 ft bgs, but the section indicates that there is slag in this interval. The MS-09 has metal only between 2.5 and 5 ft bgs, but the section indicates that most of the length of the boring had trace metal. The log for MS-14A indicates metal slag to a depth of 19.7 ft bgs, but the section indicates that there is only trace metal between 10 and 24 ft bgs. The log for MS-15C indicates that there is metal slag between 7.5 and 10 ft bgs, but the section only indicates trace metal in this location.
- **Figure C-8, Section H:** The log for MS06C only shows metal slag between 0 and 2.5 and 5 and 7.5 ft bgs but the section shows metal slag from 0 to 14 ft bgs.
- **Figure C-8, Section I:** The basis for the depiction of slag in this section is unclear. The log for MS-7A shows slag between 0 and 5 ft bgs and trace metal between 7.5 and 10 ft bgs, but the section shows slag between 0 and 5 ft bgs. The log for MS-11 A shows metal or trace slag between 2.5 and 7.5 ft, but this is not shown on the section.
- **Figure C-9, Section J:** There are discrepancies between the logs of 5 of the 6 borings and the information depicted on this section.
- **Figure C-9, Section K:** There are discrepancies between the logs of 3 of the 4 borings and the information depicted on this section.
- **Figure C-9, Section L:** There are discrepancies between the logs of 3 of the 5 borings and the information depicted on this section. There is no log for MS-15D; please provide this log.

Please resolve the listed discrepancies and also review the logs and sections for other consistency issues, then revise the figures to be consistent with the information on the boring logs. Please also explain how the thickness of slag was determined when there are borings along a line of section and discuss how estimated slag thicknesses could impact the removal action.

38. **Appendix C, Figure C-5:** It is unclear if location MR-05D, for which there is no log, should be MR-05C, as shown on Figure C-4. In addition, it appears that Sonic Drilling and Vibracore Location MR-10b in the cross-section view should be MR-10a. Please resolve these discrepancies.

39. **Appendix C, Figure C-7, Extent of Metal Slag Area:** In figures C-7 through C-9, the

area shown as "Extent of Metal Slag" by the dashed line differs from the lengths designated as "Metal Slag Area" in the cross-sections. The dashed line on the plan presumably represents the area of remediation and the "Metal Slag Area" on the sections presumably represents the actual extent of metal slag as seen in the borings. For clarity, please revise the figures to use consistent nomenclature and ensure that the cross-sections and plan agree with each other regarding the extent of the metal slag.

40. **Appendix C, Construction Specifications and Calculations, Section 02270, Shoreline Protection Materials, 1.2 Applicable Publications, page 02270-1:** It is stated in this section that the publications are referred to in the text by the basic designation only. Please clarify when and where the specific designations for the methods listed will be provided. In addition, add ASTM C131-03 (Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine) to the methods listed.

41. **Appendix C, Attachment 1 (Tetratech FW, Inc. Design Memorandum):** The text of this attachment discusses the design of slope protection at the MDR and the Metal Slag MSA, including a wind and wave analysis, boat wake analysis, and tide datum assessment as input to the design. The text on page 1 of this Memorandum indicates that it is anticipated that large armor and filter rock may be required to protect the MDR shoreline, and that small armor and filter rock may be required to protect the MSA shoreline. The analysis presented in Attachments A through G appear to be based on proposed shore protection by revetment which is composed of armor rock and riprap. However, the cross-sections presented in the construction drawings do not show that small armor rock will be used for the MSA and no riprap use is proposed for the MDR. The cross-sections provide for the MSA (Figures C-14 and C-15) show that only sand will be used as a backfill and shore protection. Please revise the Work Plan to reconcile the shore protections simulated in the design and those presented on the construction drawings. The plan views of the reconstructed slopes should show the extent of any large or small armor rock, rat rock and filter rock. If no small armor rock is to be placed on the reconstructed MSA shoreline, please provide evidence that the sand backfill will be resistant to wave erosion.

42. **Appendix D, Section 2.4, Construction Activities, Page D.2-2:** The selected location for installation of silt fencing at the MDR and the MSA areas requires clarification. The locations selected for silt fencing and sandbag berm placement appear to be redundant, or perhaps are misprinted in the text. The description of the location proposed for silt fencing reads, "...silt fencing will be used along the fence line shown in Figures D.2-1 and D.2-2." This sentence appears to contain a misprint because silt fencing is proposed for protection of the shoreline while the fence lines are rarely located along the shore. Please clarify the proposed location for silt fencing.

43. **Appendix D, Section 2.4, Construction Activities, Page D.2-4:** Sufficient evidence to build the case for the interpretations of the Dredging Elutriate Test (DRET) and column

settling test (CST) is not presented. The Stormwater Pollution Prevention Plan (SWPPP) suggests that results of DRET and CST test results indicated that the majority of suspended materials would settle "quickly" (within a couple of hours) and that contaminants associated with removal action activities would not exceed effects-range medium (ER-Ms) at a compliance monitoring point 300 feet away from the site. The Work Plan (Section 4.5.2) and SWPPP summaries of contaminant mobility results are consistent regarding the CST; however, the presentation of DRET results is inconsistent. The Work Plan reveals that results of the DRET test indicate that zinc, nickel, and copper may exceed surface water quality criteria at the point of excavation. The two sections should summarize the results using the same descriptive parameters as results from the same or comparable monitoring points. Please revise these two sections by including a detailed summary of the data set including the surface water quality criteria and monitoring points with constituents exceeding criteria; ensuring that descriptions of this data are consistent throughout the Work Plan; and present conclusions drawn from observed trends in the summary of data.

44. **Appendix D, Section 2.4, Construction Activities, Page D.2-4:** Minimal details were included in this section for site restoration. Wetlands reconstruction will depend on the post-construction site conditions; however, the variables affecting reconstruction are not discussed. The Work Plan should include a discussion of post-construction decisions affecting the new wetlands design. Further, the rationale for deciding not to restore the wetlands habitat to pre-construction conditions (recorded by a survey of wetlands features such as topography, drainage, and vegetation prior to mobilization) is not given. Please explain how no net loss of wetlands habitat, Objective 1 of site restoration in the Work Plan, will be secured if pre-construction wetland habitat is neither documented or reconstructed.

45. **Appendix D, Section 2.4, Construction Activities, Page D.2-4:** Insufficient information is provided for revegetation and landscaping. Site restoration activities will include planting native vegetation species "to the extent practical" and landscaping to restore the natural habitat. The intent for planting native vegetation to the extent practical needs to be defined and the rationale for not planting vegetation to restore pre-construction distributions should be presented. Please provide examples of activities involved in landscaping and explain how restoration of the natural habitat will be documented following the removal action.

46. **Appendix D, Section 3.0, Best Management Practices to be Implemented for Construction Activities, Page D.3-1:** Complete evaluation of metals as a source of pollution is not addressed by the stormwater prevention program. This section presents Best Management Practices (BMPs) developed to maintain and eventually control sources of contamination and off-site contaminant migration resulting from construction activities. The potential source list on page D.3-1 identifies metals as a potential pollution source; however, it appears that BMPs were not developed to encourage proper

management of metals contaminated media. Although the text Section 3.4 discusses favorable management of contaminated debris and soil, metals are not specifically discussed. Since the Work Plan does not propose analysis of samples for metals, it does not seem appropriate to assume that the measures discussed in Section 3.4 will mitigate potential sources of metals. Please develop and present BMPs for metals contaminated media.

47. **Appendix D, Section 3.4, Contaminated Debris and Soil Management (CA22):** Although the excavated material will be disposed off-site, stockpiles will serve for temporary storage of debris and may present a potential hazard. Stockpiles will be covered with a 10-mil (millimeter) polyethylene sheeting to prevent wind or stormwater erosion of contaminated materials; however, this does not prevent human or ecological receptors from potential exposure. Please discuss the protective measures being taken to avoid this situation.

48. **Appendix D, Section 4.2, Preservation of Existing Vegetation (ESC2), Page D.4-1:** Minimal information is provided concerning the methods for marking limits of grading or disturbance. This activity is performed to separate the disturbed areas from the preserved areas of vegetation; however, in the past, areas of preserved vegetation have been disturbed during field activities. Please describe how preservation areas will be marked.

49. **Appendix E, Sampling and Analysis Plan, Section 4.1, Radiological Surveys and Excavated Material Sampling, Page E.4-1:** The Sampling and Analysis Plan indicated that discrete media samples will be collected from areas exhibiting the highest gamma radiation measurements. However, this approach may not be effective in detecting areas of Strontium 90. Further, the 1 sample/14 cubic yards determination should be better justified. Additionally, Section 5 of the Work Plan indicates that numerous static measurements shall be taken, but it is unclear from the discussion in the Sampling and Analysis Plan specifically where these sample types will come into play. Please revise this Section of Sampling and Analysis Plan to address these concerns.

50. **Appendix E, Section 4.2, Water Quality Monitoring, Page E.4-2:** The water quality monitoring proposed for this project in not adequate. The proposed monitoring excludes monitoring for metals exceedences of surface water quality criteria caused by contaminants fluxing from sediments during excavation. The potential for metals to exceed surface water quality criteria during excavation activities exists because metals in sediments at the MDR and the MSA areas exceed surface water criteria and results of the DRET test, compared to marine acute water quality criteria, indicate that zinc, nickel, and copper may exceed surface water quality criteria at the point of excavation. Please add metals to the requested analyses of the daily water samples collected for radiological monitoring. Also, the monitoring points selected for this project are questionable. Please confirm that monitoring 300 feet away from the shoreline will provide results determining if BMPs are effective in minimizing contaminant mobility. Additionally, the

text indicates that turbidity outside the silt curtain is visually indicated, additional surface water quality monitoring may be performed; however, Section 6.2 does not provide for observation of turbidity outside the silt curtain. Please ensure that this activity will actually occur by including provisions for it in this appendix.

51. **Appendix E, Sampling and Analysis Plan, Section 4.2, Water Quality Monitoring, Page E.4-3:** Section 4.2 states that 10 percent of the water samples collected will be sent to an offsite laboratory for Strontium 90 ($^{90}$Sr) analysis, but then states that additional alpha Spectroscopy will be performed if either $^{90}$Sr or $^{137}$Cs is detected. It is unclear whether the "elevated levels" would be those detected by the field lab or by the offsite lab. Please revise the Work Plan to clarify where the elevated $^{90}$Sr and $^{137}$Cs sample measurements would take place to trigger the additional alpha spectroscopy examination.

52. **Appendix E, Section 4.3, Post-Excavation Sampling, Page E.4-3:** The description of post-excavation sampling is not consistent between the Sampling and Analysis Plan (Appendix E) and the Work Plan. This section indicates that sixteen systematically located samples will be collected following excavation activities; however, Section 7.14 in the Work Plan indicates that two types of post-excavation samples will be collected - random and systematic. Please resolve this inconsistency.

53. **Appendix E, Section 4.4, Waste Characterization Sampling, Page E.4-3:** The criteria for determining when certain analyses should be added to the analytical suites for non-radiological stockpiled soils/sediments is missing. The text indicates that asbestos, STLC, and TCLP analyses will be added as applicable; however, no additional information is provided explaining the typical situations requiring this application. Please include this information in the text.

54. **Appendix H, Site Characterization Documentation:** There are errors or omissions on several core logs and some logs appear to be missing. The log for MR-08B repeats the 2.5-5.0 ft bgs information for the 5-7.5 ft interval and the 7.5-10 ft bgs interval appears three time on this log. Please correct this log. There are a similar problems on logs MS-06B and MS-13-B1; please correct these logs. The 7.5 - 10 ft interval on MS-06D indicates that the trace slag may be due to "possible fall in from surface," but there is no slag indicated in the 0-2.5 ft bgs interval. Please resolve this discrepancy and correct the log. In addition, no logs were provided for several borings on the cross-sections. Please provide the missing logs.